AVIATION

The Oldest American Aeronautical Magazine

JUNE 9, 1924 Issued Weekly PRICE 10 CENTS

Airplane view of the Olympic Stadium at Colombes, France

VOLUME XVI

NUMBER 23

SPECIAL FEATURES

COMMERCIAL AIR PILOTS ORGANIZE

THE PIONEER EARTH INDUCTOR COMPASS

BRITISH DEVELOP AUTOMATIC CAMBER GEAR

HOW GOODYEAR III WON THE SAN ANTONIO RACE

GARDNER PUBLISHING CO., INC.
HIGHLAND, N. Y.
225 FOURTH AVENUE, NEW YORK

Entered as Second-Class Matter, Nov. 22, 1920, at the Post Office at Highland, N. Y.
under Act of March 3, 1879.

AIR MAIL PLANE WITH NEW LOENING WINGS

The American DH type plane with Liberty motor is generally conceded to be a fine flying machine, so that the achievement by the Loening engineers of a very decided improvement in the speed range, climb and maneuverability of this machine is proof of the thorough and precise engineering of an organization with a versatile experience in building all types of airplanes.

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JUNE 9, 1924

AVIATION

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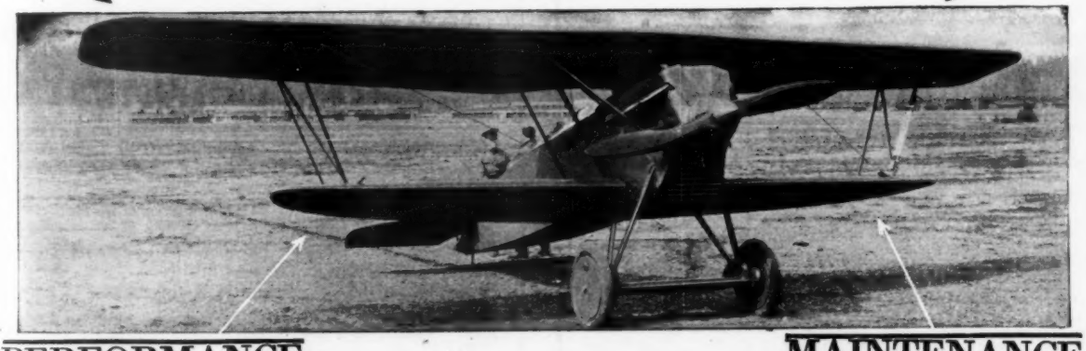

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British Air Crashes

EVIDENTLY some very inaccurate information is being circulated regarding British air crashes for AVIATION published in its issue of April 29 a note headed "Rivalry Blamed on British Air Crashes" which C. G. Grey of *The Aeroplane* states is incorrect in almost every particular.

He writes in this connection: "The Air Force has made no attempt whatever to develop airplanes or motors capable of equalling the speed made by American machines. Our only attempts at speed machines have been made by private enterprise. Our fastest Service machine does a bare 150 mi./hr. (see Sayers damning table in this week's issue). One of our speed machines, the Sopwith Hawker, crashed after the Aerial Derby and before the Schneider Cup Race last year, but the pilot was unhurt. So no fatalities, Service or Civil, have happened on speed machines.

"Not one of the R.A.F. crashes was on a fast machine even such as we have. All of them were old Service machines of wartime design and construction (Bristol Fighters, DH9A's, Snipes and Avros), with the exception of one solitary experimental all-metal two-seater fighter machine which crashed at the experimental station at Martlesham Heath.

"The Aeronautical Research Committee is not urging the Air Ministry to investigate engine failures. Very few of the accidents were due to engine failures and, in any case, there are more than enough technicians investigating engine and airplane design every day and all day. And the Aeronautical Research Committee has nothing to say on the subject anyway.

"In proportion to the number of machines and pilots employed, and the number of miles flown, the percentage of fatal accidents in the R.A.F. is very considerably lower than the proportion of fatal accidents to British passenger machines. There are 24 Civil pilots and about 2000 Service pilots.

"The Air Ministry has not proposed in Parliament an investigation of all flying accidents. The reason why it has not done so is simply that ever since the early days of the war, there has been a permanent Accidents Committee, as a regular department of the Air Ministry, and the duty of that Committee has been to investigate the cause of every accident. Since Civil Aviation was resumed, in 1919, the duties of that Committee have included the investigation of Civil Aviation accidents, as well as Service accidents. Formerly civilian accidents were investigated by the Royal Aero Club. The Accident Committee (Air Ministry) does not publish reports on the accidents because in many cases it is impossible to fix for certain the cause of the accident, and publication of what the Committee *believes* to be the cause of the accident would in a good many cases lay it open to an action for libel by the constructor of the machine or engine or by the proprietor of the outfit. I include the latter because a good many accidents in Civil Aviation have been due to bad maintenance.

"The majority of the accidents both in the Air Force and in Civil Aviation, both fatal and otherwise, have not been due to engine failure or to defective construction of the machines but simply due to bad judgment or sheer carelessness on the part of the pilots. It is possible to design an airplane which even the most careless or clumsy pilot cannot cause to stall and nosedive, or sideslip and spin, in to the ground. Some day we shall have such machines and the death rate will decrease accordingly. But so long as the Service and Civil Aviation authorities are content to permit the use of machines which depend on the skill and judgment of the pilot, then an accident which is due to a mistake by the pilot can only be ascribed to negligence and cannot be blamed on designers and constructors."

Who Is to Blame for Our Air Impotence?

IT seems an odd role to be playing for anyone in aeronautics to say a good word for Congress, but out of fairness and lest the misstatements that are being made continually cause further harm, the real situation should be understood.

Appropriation bills are prepared very differently now than in the past. First there is the Department budget. The Bureau of Aeronautics tries to get all it can from the officers of the Navy charged with preparing the budget. Usually it is told to limit the appropriation for the Naval Air Service to the same amount as the previous year, regardless of the growing importance of aircraft, with the fleet. In the War Department the Air Service is all entangled in the scramble of the Coast Artillery, Cavalry and other branches for more funds. It is also usually limited to the same amount as the previous year. Notwithstanding all of the persuasion and reasoning of Admiral Moffett and General Patrick for a larger appropriation, the Secretaries send their own estimates to the Director of the Budget. From that point on there is little hope for increases. The estimates then go to Congress, but the Chiefs of the Air Services are estopped from asking for more. Their statements at the hearings are therefore merely prefunctory so far as any hope for added appropriations is concerned. Formerly the Military and Naval Affairs Committees held the hearings, but now The Appropriations Committee is handling all hearings on appropriations. And aside from a natural disposition to cut appropriations, it is only fair to Congress to state that during every year since there has been a Budget, Congress has appropriated the money requested by the Secretaries.

So, why continue the popular but ignorant pastime of blaming our air impotence on Congress? It has enough blame to carry without this. In fact, the blame rests squarely on the Departments themselves, and if aeronautics is regarded of such minor importance, then why blame Congress for small appropriations?

The Huff-Daland Petrel 4 and TW5 Airplanes

Good Performance and Simple Maintenance Characterize these Wright-Engined Cantilever Biplanes

Huff-Daland & Co. of Ogdensburg, N. Y. have just announced the completion of official trials and service tests of their new Petrel Model 4 and of their TW5 Training Plane. Five planes of the latter type have recently been delivered to the Army Air Service at Brooks Field, Tex. As the two types are identical except for the narrow, single seated front cockpit of the TW5 and for the different performances due to variations in the useful load, the description of the Petrel which follows will, at the same time, cover the structural features of the TW5 Training Plane.

Representing a development and refinement of the original Huff-Daland cantilever biplanes of 1921 and 1922, and retaining the same features of simplicity and ease of maintenance and exposure is reduced to the simple matter of surface inspection and the proper covering of exposed parts with paint. Interiors of tubes are coated with a protective compound and then hermetically sealed as a further prevention against possible rust. Major joints and fittings are reenforced with mild steel finger strap, welded in place, and designed for twice the normal factor to remove the possibility of crystalizing from excessive vibration.

Landing Gear

A steel tubular under carriage of the tripod type is used, doing away with a "between-the-wheel axle," and removing to a large extent the possibility of nosing over when landing in

Huff-Daland "Petrel 4" commercial three-seater (190 hp. Wright E2 engine)

to be found in the earlier machines, Petrel 4, is felt to be a real advancement in the field of commercial aviation where high speed and performance are required for fast cross country flying, photography, smoke writing and similar forms of industrial activity. Built according to Air Service specifications for advanced training machines, the Petrel 4 has proved by static and flying tests to meet the requirements of hard landings and rough air work in acrobatic schools. It will be noted from the following description that unusual attention has been paid to the problem of simple maintenance under service use.

Standard installation consists of the Wright E4 motor, rated at 180 hp., but developing well in excess of 200 hp. under service conditions, and conceded to be one of the most reliable power plants the industry has yet produced. The older models of 150 and 180 hp. Wright-Hispano and the Hispano-Suiza motors are offered as an alternate installation, where their availability or low initial cost make them the desirable motor to use.

Fuselage

A further development of all-steel tubular welded construction is presented in this machine, in which a complete stream lined unit from fin and stern post to motor mount, is obtained. The light wooden false work for turtle decks and cowling has been entirely eliminated, and the side cowl and padding is formed directly upon tubular structures encircling each cockpit.

As in the earlier Huff-Daland planes, bracing wires have been replaced everywhere with direct members, insuring permanent alignment under all climatic changes and service use, while the problem of dry rot and deterioration from storage tall grain or weeds. Standard DH4 wheels are provided as an added precaution in soft field landings.

Shock absorbers are carried on the upper end of a telescoping tube, clear of all contact with dirt and oil, and wound on removable units which can be detached and wrapped in the shop if desired. Four large bolts secure the chassis to the machine, which has been removed and replaced in less than twenty minutes after raising the fuselage above the floor.

A steerable tail skid is provided, rubber sprung in conventional manner and arranged to swivel freely when taxiing on the ground. Shock absorbers are attached with hooks, and the whole unit can be withdrawn by removing one 3/8 in. bolt and one clevis pin which hold the safety check wires in place.

Wings

From a structural standpoint Petrel Model 4 adheres closely to standard Huff-Daland cantilever biplane practice. Each wing is a unit in itself and is built upon continuous box spars, with spruce flanges and double diagonal spruce planked sides. The wing curve has been changed to the USA35, permitting a taper in both plan and rib section, with a large increase in the weight strength ratio over the untapered type. The most remarkable feature, however, is the unusual rigidity of the structure and the extreme maneuverability and sensitiveness to lateral control, which is due in a large extent to the reduction in camber and area at the tip.

Wing bracing is similar to the previous types, consisting of adjustable steel tubes stream lined with wood and entirely eliminating the use of external wires. Flying tubes for the rear beam are swept forward to the fuselage, however, attaching in front of the passenger cockpit and permitting ready entrance and exit without interference of any kind.

Assembling is extremely simple, the upper wing being secured by four ⅜ in. hinge pins to tripod and rear flying struts, which are already assembled in place, while the lower wing is raised into the fuselage recess and with the use of four bolts, securely drawn to its seat. The N struts are then bolted in place, the whole structure having been adjusted at the factory and requiring no alignment in the field. All struts are numbered to avoid error in assembly by untrained personnel.

Control Surfaces

Ailerons are balanced and washed-out at the tips as in the original Petrel design, in order to accentuate the delicate and sensitive control. They are mounted on torque tubes extending their full length and carrying through to arms located near the center of the wing, which are actuated by push and pull struts connecting to cranks on torque tube and stick control. It has been found that the elimination of wires in this manner is responsible for an unusually smooth and delicate motion, while at the same time avoiding the necessity of constant inspection of pulleys and cables in service use.

The rudder is balanced, while elevator and adjustable stabilizer are cambered and of rather high aspect ratio, in order to obtain a large amount of stability with sensitive control. Tail surfaces are hinged with brass pins of ample areas to minimize service wear and are moved by cables in conventional manner, only two pulleys appearing in the entire machine.

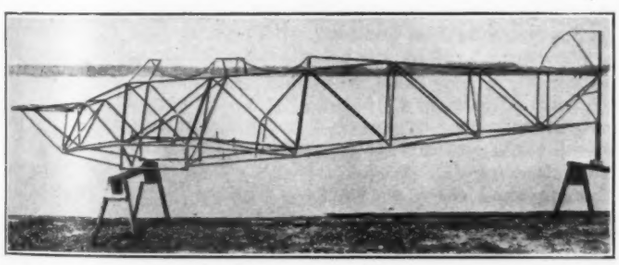
Seating Arrangement

The rear cockpit is designed for the pilot, and is fitted with a complete set of instruments as well as all engine, radiator, fuel system and flying controls. Double elevator wires are directly connected to the stick, while a torque tube with push and pull rod within it passes under the floor boards to the forward seat.

The front cockpit is arranged with engine and flying controls for dual training, but both rudder bar and stick can be readily removed, an aluminum plate sealing over the opening in the floor, and leaving a roomy seat for two passengers, placed comfortably side by side, without possibility of interfering with the flying control. Ample leg room is provided in the front seat, while a large locker under the forward floor boards allows space for tools and supplies.

Power Plant

Two 22 gal. tanks are located between the spars of the upper wing, so shaped as to fit perfectly in place, but uncovered, and supported by straps in such a way that they are instantly re-



Welded steel tube fuselage used on the Huff-Daland Petrel 4 and TW5

movable for cleaning and repair. Gasoline is piped down the flying struts to a control valve and standard air service strainer located in front of the fire shield and thence to the carburetor —a simple gravity feed throughout. No gasoline reaches the cockpit and the fire hazard due to leaks or serious crash is minimized to the last degree. A direct reading gasoline float gage is located beneath the upper wing.

The motor is supported on wooden bearers bolted into a steel tubular bed, the radiator resting on heavily padded wooden members on either side of the propeller. U. S. Cartridge core radiators equipped with shutters are standard installation. The whole system can be removed without disturbing cowling or propeller, and has been detached and replaced by one man in less than an hour's time. The engine cowl is made up in

Huff-Daland TW5 military training plane (190 hp. Wright E4 engine)

two pieces, securely fastened with a patented clip and can be completely removed in one minute, exposing the oil tank, magnetos, pipe lines and all parts of the motor in a completely accessable position.

SPECIFICATIONS AND PERFORMANCE

Span, upper wing .....29 ft. 4 in.	Minimum speed .....40 mi./hr.
Span, lower wing .....23 ft. 8 in.	Climb to 10,000 ft. ....23 min.
Length, overall .....24 ft. 0 in.	Two passengers, pilot
Weight empty with water 1475 lb.	and baggage .....600 lb.
Useful load .....900 lb.	Fuel capacity .....44 gal.
Total weight .....2375 lb.	Cruising radius,
High speed .....115 mi./hr.	300 mi. at 90 mi./hr.

Progress in Helicopters

Since April 1, 1924, the International Aeronautic Federation recognizes officially records made with helicopters, and the two foremost French inventors of helicopters are now engaged in a friendly duel to beat each other's performances.

Etienne Oemichen became the first holder of an official helicopter record when on April 17, at Valentigny, France, he made a horizontal flight of 525 meters (1722 ft.) in a direct line. This record was beaten by the Marquis Pateras Pescara on April 18, when at Issy-les-Moulineauz airdrome, near Paris, he made a horizontal flight in a straight line, covering a distance of 736 meters (2550 ft.). The time taken was 4 min. 11 sec., and the machine remained steadily over 6 ft. above the ground. The best previous performance of this machine was a 600 meter flight, made last January.

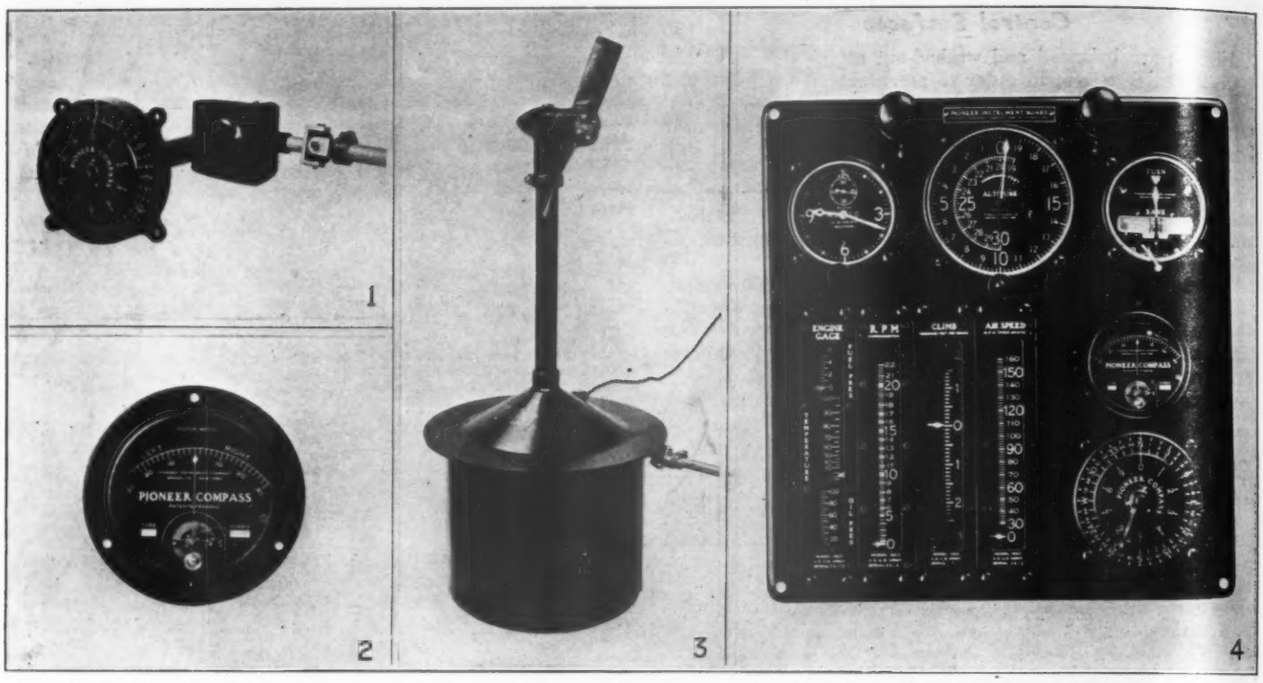
On May 5 Oemichen accomplished the first circuit flight to the credit of a direct lift machine, covering a triangular one-kilometer course in 7 min. 40 sec. With this flight, which was controled by the technical section of the French air service, Oemichen won a prize of 90,000 francs offered by the French air department for the first one-kilometer circuit made by a helicopter.

Entries for the international helicopter competition for the British Air Ministry's prize of £50,000 closed April 30, last. There are between fifteen and twenty entries, including some of the best known exponents of helicopter construction. It is understood that Emile Berliner, the foremost American pioneer of direct lift flying, as well as Oemichen and Pescara have entered machines. Louis Brennan, the British helicopter pioneer, whose achievements have been surrounded with considerable secrecy, is barred from the competition under a special arrangement between this inventor and the British air ministry.

The conditions of the competition are extremely difficult, considering the above records. To win the prize the following performances are required of a helicopter: Rise vertically to 2000 ft. altitude; hover there for half an hour and descend safely; make a circular flight of 20 mi. length at 60 mi./hr.; make a gliding flight from 300 ft. altitude with the engine stopped and land in a small area. The difficulties involved in these performances will be seen from the fact that no free helicopter ever rose higher than 10 ft. from the ground—although the Austrian captive helicopter of Karman and Petroczy did ascend to 150 ft.; that no helicopter ever made a gliding flight with the engine stopped or any kind of precision landing; and that the greatest horizontal speed ever made by a helicopter is about 6 mi./hr., or one tenth that required in the competition.

The Pioneer Earth Inductor Compass

Description of New Instrument Used by American World Fliers in Spanning Pacific from Alaska to Japan



The Pioneer Earth Inductor Compass—1, controller; 2, meter; 3, generator; 4, Pioneer instrument board, with the meter and controller for the earth inductor compass mounted in the lower right hand corner

The recent exploits of Air Service pilots in making successful long cross-country flights above or through the clouds has aroused much interest in the Earth Inductor Compass, which has made these feats possible. We are pleased to be able to give our readers the following description and explanation of this interesting instrument.

Fundamentally there are but two means of determining directions on the earth's surface, exclusive of astronomical observations. These are, first, the rotation of the earth on its axis, upon which is based the gyroscopic compass; and second, the magnetic lines of the earth, which are used by the ordinary magnetic compass and by the earth inductor compass.

Principles of the Compass

The ordinary magnetic compass consists of one or more magnetized needles supported on a pivot in such a way that they may align themselves with the earth's magnetic lines. The earth inductor compass operates by the rotation of a coil in the earth's field with the resulting generation of electric potential. The determination of the direction of the earth's lines by this method is not new, but it has remained for the Pioneer Instrument Company to produce a practical aircraft compass using this principle.

The difficulties of using an ordinary magnetic compass on aircraft are well known. A location within view of the pilot is usually subject to variable local magnetic fields, making compass readings unreliable unless the compensation is frequently checked. The vibration of the compass card introduces further serious errors.

In the Pioneer Inductor Compass the above difficulties are wholly avoided. The new compass depends for its directive sense upon the earth's magnetic field, but here ends all similarity to the ordinary magnetic compass.

The components of the Pioneer Compass are shown diagramatically in Fig. 5. They are: the generator *G*, the controller *C* and the indicator or meter *M*. The generator, which is illustrated in Fig. 3, is driven by an air impeller. It may, however, be driven by a small electric motor. The generator is similar in principle to any electric generator. It has an armature and brushes, but depends upon the earth's magnetism for a field. The potential generated is therefore dependent upon the position of the brushes in respect to the earth's magnetic lines.

The controller, shown in Fig. 1, is simply an angle indicator, having a card similar to a compass, and a crank for rotating the card. An inner dial, graduated to single degrees, permits accurate setting. The controller is mechanically connected to the brush-gear of the generator, the rotation of the controller moving the brushes through the same angle as that through which the controller card is turned. The meter (Fig. 2) is similar to an ordinary volt meter. It is electrically connected to the brushes of the generator.

How the Instrument Operates

The operation of the Earth Inductor Compass is very simple. The controller is rotated to indicate the desired heading. This rotates the brushes of the generator into such a position that there will be no flow of current when the aircraft is headed in the direction indicated. The pilot accordingly turns his ship until the meter hand comes to zero. By steering so as to keep the hand on zero the proper heading is maintained. To change to a new course, the controller is rotated so that the proper heading is indicated on the dial, and the pilot then turns the aircraft until the meter hand again comes to zero.

Additional controllers or meters may be installed to permit the direction of the pilot by a navigation officer, or to give the full use of the compass to each of two pilots.

As a location may be selected for the electro-magnetic unit which is relatively free from local magnetic fields, errors from

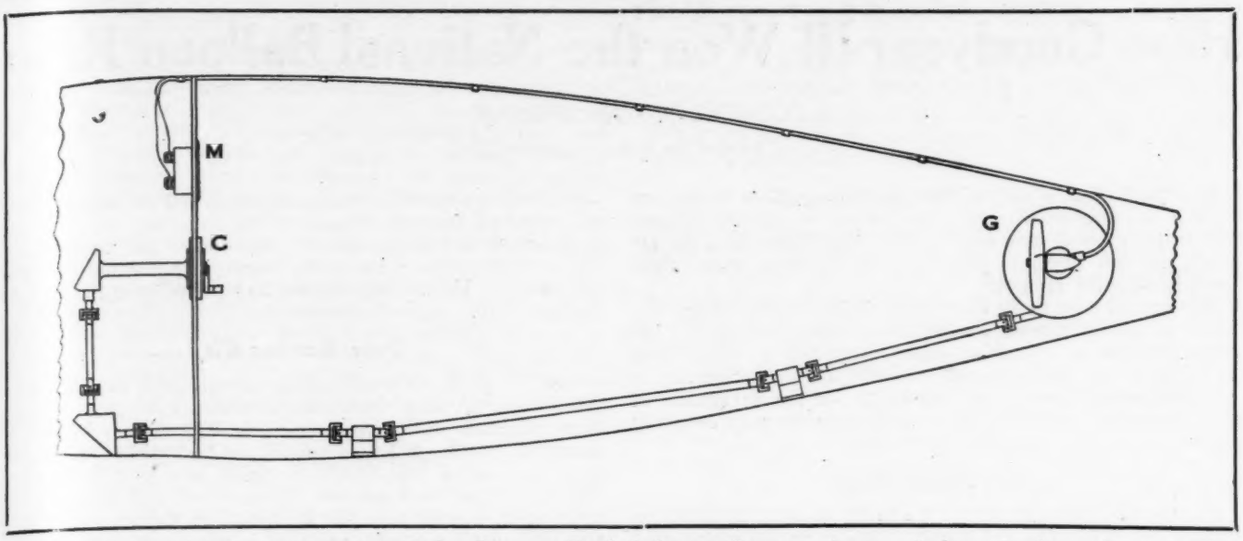


Fig. 5. Diagram showing arrangement of the Pioneer Earth Inductor Compass in an airplane fuselage—C, controller; G, generator; M, meter

this source are reduced to a minimum, and vibration has no appreciable effect since there is no element comparable with the card of a magnetic compass which is subject to rotation.

With the Pioneer Earth Inductor Compass aircraft can be navigated with much greater ease and accuracy than with an ordinary compass. The new instrument has been used on many long flights by the Army Air Service and the airplanes on the World Cruise are equipped with it.

The Earth Inductor Compass is the invention of Morris M. Titterington, the Chief Engineer of the Pioneer Instrument Co., who has spent several years upon its design and development.

The D.H. Automatic Camber Gear

Trailing-edge flaps, that is, ailerons extending the whole span of the wing, have long been used in Europe for the purpose of increasing the speed range of airplanes by altering the camber of the wings. The Fairey Co. of England, in particular, has been using such a device for many years with considerable success on all its sea and land planes. In the Fairey camber gear the flaps are operated by the pilot from the cockpit by means of a hand wheel.

The De Havilland Aircraft Co. has now produced a device which alters the wing camber in flight automatically, that is without requiring any attention of the pilot's. This device was recently demonstrated in England, mounted on a DH50 passenger plane fitted with a 240 hp. Siddeley Puma engine, and has given some remarkable results. Owing to reasons connected with the granting of foreign patents, a detailed description of the mechanism employed in the D.H. automatic camber gear is not yet available, but the particulars which follow will enable our readers to get a general idea of the device and of the results it produces.

The D.H. automatic camber gear consists of two flaps which look exactly like normal ailerons, except that they extend the entire span of the wings. When the machine is at rest, stiff springs hold the flaps down at an angle of approximately 15 deg. to the normal position corresponding to high speed flight. The flaps remain in this position until the air speed of the machine rises to a moderately high figure—70 mi./hr. in the DH50—and as the speed continues to increase, they move up until they come against a stop in the high speed position. In this position the flaps lie flush with the rest of the wing section, that is, the wing section becomes normal, so that the high speed of the airplane is not affected by the camber gear, save for an immaterial addition of weight of the device, which is quite light.

The flying trials of the DH50 showed that the automatic camber gear reduced the landing speed by about 6 mi./hr. (from 48 to 42 mi./hr.), while the ship remained controllable down to 50 mi./hr. instead of 60 mi./hr. It was remarked that the attitude of the fuselage changed very little over the entire speed range, and remained practically level down to landing speed. This is easy to understand, for the pulling down of the flaps not only changes the camber of the wing but its angle of incidence as well, which naturally corresponds to pulling up the nose of an ordinary airplane. The steadiness of the fuselage resulting from automatic camber should prove of considerable value on landing by improving the range of vision from the cockpit.

The correspondent of *Flight*, in reporting these trials, writes: "Even on approaching the airdrome when about to land, the tail remained nearly horizontal, and the speed at which the airdrome was approached seemed ridiculously low, especially when taken in conjunction with the level fuselage. As a matter of fact, the feeling of floating into an airdrome at about 45 mi./hr. air speed with the tail still well up is wholly delightful, and gives a sense of security that must be experienced to be appreciated. On dropping to the ground the machine stopped its forward speed almost in its own length, the flaps, then right down, and the whole wing at a large angle, acting as a very efficient air brake."

Another point which was noted on trials of the automatically cambered DH50 was that while the rate of climb remained the same, the angle of climb was considerably improved. That is to say, while it took the machine the same amount of time to reach a given altitude, the automatically cambered plane reached that height at a steeper angle, or at a lesser distance from its starting point, than a normally controlled airplane.

Argentine World Flight Plans

Maj. Pedro Zanni, the Argentine military aviator who is planning a flight around the world, and who is now in England, does not expect to be able to start his journey before the end of June. He announced that he would follow the example of Lieut. Peltier d'Oisy, the French flier, and do but little resting and a great deal of flying.

As a result of his observations of the flights of the other round-the-world aviators, Major Zanni has decided to alter his plans so that the journey from Egypt to Japan will be made in a fortnight, thus sparing the aviators the necessity of spending much time in the torrid zone.

Work on the airplanes ordered by the Argentinians has been temporarily halted awaiting their signatures to a contract with the constructing company. The construction of the first of the airplanes is well advanced.

How Goodyear III Won the National Balloon Race

By W. T. VAN ORMAN

Pilot of the Balloon Goodyear III

Our part of this year's National Balloon Race started at 5:40 p. m., Central Standard time, when we shouted "Hands off" to the ground crew and the Goodyear Third took the air on its maiden flight as gracefully as the more experienced craft leaving the ground.

We carried with us 82 bags of sand, food sufficient for two weeks in case of forced landing in Canada, shot gun for the same purpose, four carrier pigeons supplied by the Pigeon Division of the Army, a radio set of 3,000 mi. range, and a complete set of instruments necessary for the navigation of three balloons. All of these instruments were very carefully developed for this particular purpose.

The Flight Plan

It was our plan of attack to work easterly as much as possible to drift into the proper relation to the storm area which was central over Colorado at the time. With this plan in mind we selected the slower currents.

At 7:15 p. m. we tuned in radio station WOAI at San Antonio and were informed no weather report was available. At 7:50 we passed over Fornea, Tex. We had 80 bags of ballast on hand at this time.

At 11:30 we tuned in radio station WTAM, the Willard Storage Battery Station, at Cleveland, Ohio, which was broadcasting a series of special weather reports and a concert for our benefit. We also picked up station KHJ of Los Angeles, but inasmuch as it was not scheduled to send us weather reports we confined our attempts to Cleveland. At about 12:20 a. m. I had the pleasure of hearing Mrs. Van Orman bid me good-by from the Cleveland station.

At 3:40 p. m. found us crossing the Red River between the border of Oklahoma and Texas. At 3:58 the Cleveland station WTAM signed off.

Sighting Another Balloon

At 6:15, the morning of April 24, found us with 68 bags of ballast on hand, and at 7:30 we sighted another balloon to the west, H. V. Thaden flying the Detroit Aviation Society Balloon. He was one mile to the west of us, flying about 3,000 ft. At this time we were riding at 5,000 ft., choosing the slower currents for the sake of ballast economy, and in a few minutes he passed to the north of us and ahead. At this time all the contestants in the race were ahead of us.

At 10:55 a. m. we passed Middleberg, Okla., at an altitude of about 6,000 ft. At 1:40 p. m. found us with 45 bags of ballast on hand, and at this time we felt that it was necessary to rise to a higher altitude to avoid unstable currents and obtain more easterly currents.

At 2:10 p. m. we were at an altitude of 17,000 ft., encountering a very severe snowstorm. Unfortunately we had not been able to secure an oxygen supply in San Antonio, and in addition to the cold we noticed the lack of oxygen due to the rarity of the air.

Lack of Oxygen

At 2:53 we were at an altitude of 15,500 ft. At 3:10 p. m. we were fighting against drowsiness which was overcoming us due to the lack of oxygen. I made a short note on the log as follows: "Noted the lack of oxygen." At this time it became evident it was physically impossible to remain at this altitude any longer, and at 3:27 we started our descent down to about 9,000 ft.

In our altitude rise we encountered a drop in temperature of 80 deg. on the ground to 20 deg. above zero, and at 9,000 ft. the temperature rose to approximately 50 deg. and we felt a great deal more comfortable.

At 4:47 we were in the vicinity of Redfield, Kan., with 35 bags of ballast on hand. We had a very difficult time in learning our location inasmuch as the farmers seemed more anxious to find out who we were and where we were going than to tell us the name of the nearest town.

At 6:45 we tuned in radio station WHB at Kansas City, and obtained complete reports on the facts that two balloons had landed in Oklahoma, and two others had passed over Kansas City. Also, later in the evening, we received information that the U. S. Army balloon had passed over St. Joseph, Mo., at 7:10.

Over Kansas City

At 7:45 p. m. we were passing directly over the radio station WHB. A very remarkable coincidence happened at this time, inasmuch as the manager of the Kansas City branch of Goodyear broadcasted us a message of best wishes and stated that they hoped the Goodyear Third was in this vicinity. After the race we wrote our manager and told him that we were right directly over the broadcasting station at the time we received his message, and that in the future suggested he step out on the back porch with a megaphone before broadcasting his message over the radio.

At 8:50 p. m. we had 28 bags of ballast left and were making a very satisfactory speed of 50 mi./hr. toward the Northeast. From this time on we changed our policy to one of selecting the faster currents. We were riding at an altitude of approximately 2300 ft. making excellent speed.

However, at about 10:00 o'clock we noticed a thunderstorm to the Northwest of us, and to us it represented the mixing of the warm winds from the South and the cold winds from the East and North. In addition, it represented the turning point of the wind into the North and Northwest. For that reason we allowed our balloon to drift toward this thunderstorm as close as we felt desirable, and as a precaution against lightning we took in the antenna of our radio set.

At 4:00 p. m. there appeared on the log another note: "Bad thunderstorm." I was asleep at this time and Wollam, my aide, awoke me to hold a consultation as to the next step. In looking over the situation we decided the best policy would be to draw away from the storm, which we did, and sacrificed about 10 mi. in distance from San Antonio. All through the next morning we found the thunder booming toward the East of us, but we were sufficiently far away so that it did not bother us.

Exhausting the Ballast

At 5:50 a. m. we passed over West Union, Iowa, with 20 bags of ballast on hand. At this time we found the wind shifting more and more into the Northwest. At 9:30 we passed over New Albion, Iowa, going directly North at an altitude of about 5,000 ft. At 10:45 we passed over Caledonia, Minn., at an altitude of 6,000 ft. As the morning progressed we found our ballast supply rapidly diminishing, and were now down to 10 bags. From this point on we started to throw over parts of our equipment in our efforts to stay in the air as long as possible.

At 12:00 p. m. our ballast supply had reached the point where we realized the landing would have to be made within the next hour or two. At 12:30 we were informed that we were 15 mi. East of Rochester, Minn., and at 1:30 found us with our basket stripped of all but the absolutely essential instruments, two bags of sand, and 100 lb. in parachutes and clothes, with a 50 mi./hr. wind on the ground. It was then we decided that we would have to land at the next available opportunity. At 1:40 p. m. we dropped down from 2,000 ft. and selected a field about three quarters of a mile in length.

The Landing

We leveled off and were in a position to make a perfect landing, but a slight delay encountered in pulling the rip panel, which instantaneously released the gas from the balloon, caused us to over-run the landing field about 50 ft. Our basket finally came to rest on the railroad tracks of the Chicago Great Western, 5 mi. northwest of Rochester, Minn., on the farm of Henry Shefelbine.

The balloon was not damaged in any extent, save one or two very small holes in the envelope. We just had time to get out from the basket when we heard the whistle of the train coming down the tracks over which the foot ropes of the net was spread. We succeeded in flagging this train and we were disconnecting the foot ropes of the balloon from the load ring a second train came along on the track paralleling the Chicago Great Western and cut off the section of our drag rope.

After packing our balloon, we motored to the Taylor Hotel in Rochester where we received the welcome news that we had won the race. Our first impression, of course, made us feel extremely happy, but we encountered the more serious thought that in the coming Gordon Bennett International Race to be held from Brussels on June 15 we shall have to show an even better performance in order to keep the Gordon Bennett trophy from remaining permanently in the hands of the Belgians.

Excellent Management

I feel it particularly fitting at this time to acknowledge with sincere thanks the assistance which we received from the Race Committee at San Antonio, the aid of the National Aeronautic Association, the assistance of the various broadcasting stations in broadcasting us weather reports, the citizens of Rochester, Minn., for their wonderful hospitality, and to many others who were of great assistance in this contest.

Speaking of broadcasting stations, some of the results we obtained in the radio experiment carried on in connection with the National Balloon Race will be of interest.

In this race we carried a small 19 lb. receiving set, four tubes, at the range of 3000 mi. During the flight we received the following stations: WHAZ, WMC, WOAW, KDKA, WDAP, KSD, WOS, WOAI, WTAM, WHB, KYW, WPAP, WJAX, WOC, WGY, KHJ. With most of these stations we had a special arrangement to broadcast us weather reports on a prearranged schedule.

Some Radio Performances

The best performance we obtained was the reception of WTAM, the Willard Storage Battery Co., at Cleveland, Ohio. On the night of April 23 and the morning of April 24, we held this station from 11:30 p. m. to 3:58 a. m. constantly, excepting but a period of twenty minutes, when our antenna wires became tangled.

It was quite an unusual experience to hear my wife bidding me "goodby" at approximately 12:20 p. m. from Cleveland. Also we heard several of the Goodyear boys broadcasting us messages wishing us good luck on the trip. We also received a message from AVIATION which was telegraphed to Lawrence D. Bell, vice-president of the Glen L. Martin Co., wishing us "good luck."

Exceptionally good communication was received from WHB at Kansas City. We held this station approximately three hours on the evening of April 24. From this station we received valuable weather reports, information of landing of two balloons in Oklahoma, facts that two balloons had passed over Kansas City ahead of us, and one had been sighted over St. Joseph, Mo.

We feel that radio was of immense value to us in this race, helping us to force the balloon to a successful finish.

Work of the Goettingen Aerodynamic Laboratory

Reviewed by Alexander Klemin

ERGEBNISSE DER AERODYNAMISCHEN VERSUCHSANSTALT ZU GOETTINGEN. Edited by Dr. L. Prandtl in collaboration with C. Wieselsberger and Dr. A. Betz, Vol. I, 140 pp., 91 figs. Vol. II, 80 pp. 101 figs. (R. Oldenbourg, Munich and Berlin.)

The two volumes under review, which were published with an interval of some two or three years, contain a wealth of aerodynamic information, presented with great clarity and quite evidently based on the very soundest experimentation. While the work at Göttingen is scientific and based on modern aerodynamic theory, the experiments undertaken and the positive results obtained are of immediate practical value in design—provided the designer will take the trouble to familiarize himself with German terminology and methods of presentation. Since the latest collated data on airfoils, published by the National Advisory Committee on Aeronautics, presents values of lift, drag and moment coefficients in German absolute coefficients (having twice the magnitude of the British absolute coefficients), there is no doubt that sooner or later the German absolute coefficients will be generally used in the United States. This will be a valuable step forward in the standardization of aeronautical data, and also will facilitate the reading of texts in the original German.

In introducing his first volume, Dr. Prandtl states that the work contains only unpublished results of experiments, some conducted during the war, and some shortly after its termination. Dr. Prandtl evidently regards the well known "Technische Berichte" as unpublished material, since some of the T.B. material appears in the "Ergebnisse." But its inclusion is fully warranted by its value and the more connected form of presentation.

The first volume begins with a very interesting and complete account of the Göttingen closed circuit tunnel, the wire suspension balance and the delicate speed regulation. The second chapter "Einführung in die Lehre vom Luftwiederstand" presents a concise and simple statement of the "vortex" theory. Nearly all the so-called "vortex" theory an aeronautical engineer needs to know is contained in these few pages. Wind tunnel men will read with interest and profit the chapter on laboratory technic, which includes a treatment of suspension wire collections and wall interferences.

The experimental verification of the theoretical conversion factors for aspect ratios, conducted for aspect ratios between 1 and 7, leaves no doubt as to the sufficient accuracy of such formulas for all practical purposes. Some work on scale effect is followed by tests on wings of rectangular, elliptical and variously tapered plan form. The expectation of increasing the lift of a wing by roughening the under surface, thus increasing the circulation, is demonstrated experimentally to be possible. But concurrently there is a disproportionate increase in drag, and therefore decrease of efficiency. Results of tests on Göttingen wings Nos. 335-451 are already familiar to us from the reports of the National Advisory Committee, nor is there any superiority in German wings as compared with wings developed in American laboratories.

Some interesting results are obtained on the interaction of wing and propeller when placed in different relationship to one another. Testing combinations of fuselage and wing, with the airfoil moved up and down relative to the wing, it is shown that a definitely inefficient combination is one in which the wing is placed some distance below the fuselage.

The skin friction of fabric-covered surfaces, resistance measurements of double-cambered surfaces of varying thickness, and aerodynamic tests of five different floats complete the very valuable first volume, which has recently been reprinted with minor corrections.

In his introduction to the second volume, Dr. Prandtl apologizes for delay in publishing due to the depreciation of German currency. But it is good news to hear that the Göttingen Institute has got over its difficulties and is now able to continue its research work on a larger scale than indicated by the thin second volume.

It is shown in connection with the description of a smoke-producing apparatus that when several smoke openings are introduced into the tunnel, it is apparently possible to photograph a whole field of streamline flow.

The theoretical "vortex theory" corrections are extended to biplanes and triplanes. Here experimental results are not

in anything like as good agreement with theory, as in the case of aspect ratio corrections.

The experiments on the effect of tunnel walls on wings of large span, and on the methods of suspension in the tunnel are not of such general interest. In the study of scale speed effects, cylinders, spheres and other objects are tested with varying dimensions and speeds.

Pressure distribution measurements for biplanes, integrated to give lifts on the lower and upper wing, show that at angles up to —6 deg. the lower wing carries the greater proportion of the lift, while at higher angles the upper wing carries the greater proportion of the load. As far as small angles are concerned, this result contradicts tests at the N.P.L. and in the United States. Prandtl explains the question by stating that at small angles there is a "venturi" effect between the two wings, with the suction increasing the lift of the lower wing and decreasing that of the upper wing. The vortex theory indicates, however, that the lower wing circulation increases the velocity at the upper wing and vice-versa, and at high angles of incidence this interference effect apparently overcomes the venturi effect. Prandtl's explanation for the phenomena at small angles is plausible, but more experimentation would be necessary before deciding in favor of the Göttingen results.

Tests on the Lachmann-Handley Page wing are included with one and three slots, with results in general agreement with N.P.L. tests.

A self-recording pressure indicator is utilized to measure pressures and velocities behind different resistance producing objects. The volume terminates with some interesting photographs of air flow.

Resistance of Spheres in Wind Tunnels and in Air

N.A.C.A. Report No. 185

To supplement the standardization tests now in progress at several laboratories, a broad investigation of the resistance of spheres in wind tunnels and free air has been carried out by D. L. Bacon and E. G. Reid for the National Advisory Committee for Aeronautics.

The subject has been classic in aerodynamic research and, in consequence, there is available a great mass of data from previous investigations. This material was given careful consideration in laying out the research, and explanation of practically all the disagreement between former experiments has resulted. A satisfactory confirmation of Reynolds law has been accomplished, the effect of means of support determined, the range of experiment greatly extended by work in the new variable density tunnel, and the effects of turbulence investigated by work in the tunnels and by towing and dropping tests in free air.

It is concluded that the erratic nature of most of the previous work is due to support interference and differing turbulence conditions. While the question of support has been investigated thoroughly, a systematic and comprehensive study of the effects of scale and quality of turbulence will be necessary to complete the problem, as this phase was given only general treatment.

A copy of Report No. 185 may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.

Stiffness and Strength of Wooden Beams

N.A.C.A. Report No. 180

This publication, by J. A. Newlin and G. W. Trayer, is one of a series of three reports prepared by the Forest Products Laboratory of the Department of Agriculture for publication by the National Advisory Committee for Aeronautics. The purpose of the investigation described in this report was to determine to what extent ordinary deflection formulas, which neglect shear deformations, are in error when applied to beams of various sections, and to develop reasonably accurate yet comparatively simple formulas which take into account such deformations.

A great many tests were made to determine the amount of shear deformation for beams of various sections tested over many different spans. As the span over which the beam is tested is increased the error introduced by neglecting shear deformations becomes less, and the values obtained by substituting measured deflections in the ordinary formulas approach more nearly the modulus of elasticity in tension and compression. For short spans, however, the error is considerable, and increases rapidly as the span is reduced.

Two formulas were developed for estimating the magnitude of shear deformations, both of which have been verified by tests. The first assumes the parabolic distribution of shear on a cross section of a beam and, starting with a differential volume, the distortion due to shear is determined by the ordinary methods of summarizing the work. The second assumes that the deflections due to shear in any two beams of the same length, height, and moment of inertia, which are similarly loaded, are proportional to the summations of the shear stresses on their respective vertical sections. Both formulas check experimental results very closely when the calculations are made with great refinement.

A copy of Report No. 180 may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.

American World Flight

The three American World Fliers—Lieutenants Smith, Wade and Nelson—who arrived at Kasumigaura, Japan, on May 22, spent a busy week overhauling their ships and in being entertained by the Japanese and the American colony at Tokyo. New floats have been fitted to the World Cruisers as the old floats soaked up much water. The engines, also, have been changed.

After test flights made on May 30 had shown everything to be O.K., the three ships flew on June 1 to Kushimoto, a distance of 350 mi. which they covered in 4 hr. 20 min. Heavy weather prevented them from continuing to Kagoshima the same day.

British World Flight

Major Maclaren, the leader of the British World Flight, who arrived on May 21 at Akyab, Burma, from Calcutta, crashed in the harbor of Akyab on May 24 when taking off for Rangoon. The crew was unhurt, but the plane appears to be a total washout.

On hearing of Maclaren's ill luck, the American World Fliers, then in Tokyo, offered him all the assistance they could give him. As a result one of the American destroyers detailed as a patrol vessel for the American fliers is rushing a new Vickers Vulture which was kept in reserve for Maclaren at Hakodate, Japan, to Akyab. Maclaren's thanks came in the form of a cable to the American naval attache at Tokyo, reading: "Hats off to the Stars and Stripes for real sportsmanship."

Paris to Tokyo Flight

Capt. Peltier d'Oisy, who smashed his plane on May 20 when landing on a golf course at Shanghai, China, resumed his flight on May 29 in the Breguet plane which the local Chinese governor had presented to him, by flying to Pekin, a distance of 650 mi. The French flier left Shanghai at 5 a. m. and arrived in the capital of China at 5:45 p. m., having made intermediate stops to refuel at Suchowfu and Tsinanfu. The time taken for this flight shows that d'Oisy's Chinese Breguet is a much slower ship than the 19A2 which he used from Paris to Shanghai. It is likely that it is a 14A2 two-seater corps observation plane of the type used in the war of 1914-18.

The French air department has announced that d'Oisy's flight officially terminated at Shanghai, but that he was authorized to complete his flight unofficially in a new plane.

Lisbon to Macao Flight

The Portuguese aviators, Captain Paes and Lieutenant Beiros, who are attempting a flight from Lisbon to Macao, a Portuguese colony near Hongkong, China, resumed their flight on May 31 by flying from Ambala to Allahabad, India, in a new plane which was shipped to them from Portugal.

Dropping a Wing Walker to Save Him

Western Exhibition Flier Describes an Amazing Experience

How a wing walker whose strength gave out when he was hanging from the ladder of an airplane was saved from certain death by being dropped into a pond by the pilot, is the amazing story contributed to AVIATION by Clyde W. Ice of the South Dakota Air Service Co. of Miller, S. D.

Pilot Ice describes his experience as follows:

"Dewey Mathews, experienced in parachute jumping, wing walking, etc., having secured a contract for an exhibition at Murdo, S. D., came over to Interior where I was flying to get me to fly for him. Having agreed to do so, I flew to Murdo the day before the show and found him there waiting for me.

"I was flying a Hisapno motored Standard and we expected to put on a nice show. Our day came along bright and clear, a perfect day to fly, so at three-thirty we took off with a rope ladder attached to the landing gear, intending to put on a wing walking and rope ladder exhibition. As the air was exceptionally fine, a half circle around the fair grounds brought us up to 350 ft. altitude, when I swung into the breeze and throttled my motor. Dewey got out, went down the ladder and started work. As he had tied the ladder a little to one side of the middle of the axle, I could look over the side and see him work. He was going fine, but for some reason after a minute or two he got weak and could not get back up the ladder.

Marooned on the Ladder

"When I had seen him fail after the first effort to get up to the next rung, I realized that something must be done quickly to save him. So I swung around and headed for a small artificial pond (where the R. R. Co. had built a dam across a narrow deep ravine for water supply), hoping he could stay on the ladder until I got him over the water, which was about a half mile away. Dewey was on the second rung from the bottom when I started for the lake. Just when we were over the railroad shops, his right hand slipped and he caught around the rope and got the bottom rung, when his left hand slipped too and I thought surely he would fall. Fortunately the rope twisted over his elbow and held until he got hold again with his left hand. To my surprise he held on until I had reached the end of the pond. I had my motor throttled and had glided almost to the ground so he would have only a short drop. But when we got over the water, to my great surprise, Dewey would not let loose. It seems he was so intent on hanging on that he did not even see the water, and before there was time to do anything we were across the pond.

"Right in front of us was the pump house, a smoke stack and a lot of guy wires. There was only one thing to do and that had to be done quick. Even had I had the speed to zoom over the pump house I would not have dared to do it, as it would surely have pulled Dewey off, so I banked sharply to the right, clearing the pump house and smoke stack by inches, climbed a little and swung around into the wind which fortunately was lengthways with the pond. In this way I figured I could come down between the hills and get to the water, for I had decided to drag him off in the water if he was still with me.

Dropped at Right Spot

"When I got lined up and could look over the side (I had been too busy for a second or so to watch him) I found to my joy and surprise that Dewey was still dangling on the bottom rung. I knew I could save him now, so I cut my motor and glided to within a few feet of the water, leaned out over the side and yelled to him to "let loose, which he instantly did. He struck the pond exactly where I wanted him, in deep water near a point of land that reached out about fifteen feet. I chose that particular spot to get him out easier, for I am not an expert swimmer and I figured he would be knocked out by the fall and unable to get out alone. As soon as he let loose I prepared to land on a hillside by the pond, so I could get to him quickly, but before I got the ship on the ground I saw him swimming toward shore. As it was a rotten spot for landing I made a little circle and when I got back over the pond I saw Dewey climb up the bank, walk out a few steps and sit down. So I flew back to the field, landed and rushed back in a car to get him. We brought him up to town and put him to bed till morning, when he was able to get up. He was all right with the exception of some really sore muscles and a good scare.

"Before we took off Dewey had put on two heavy shirts. Both of these were split from his belt to the collar as smooth and straight as if done with a sharp knife. As he was hanging with his back facing the direction of flight, he struck on his feet and tipped backward. I am certain he would have been killed had he been facing the way we were going.

"Another peculiar thing is that the last two exhibitions Dewey took part in before this the ships were wrecked in each case."

Commercial Air Pilots Organize

Commercial Aircraft Association of Akron Formed

In Akron on Friday, May 23, the Commercial Aircraft Association of Akron, Ohio, was organized by those interested in commercial aviation in and near Akron. The aim of the new organization is frankly stated as follows: "To promote the financial welfare of individuals interested in commercial aeronautics."

Those eligible to membership are aviators, aircraft owners, owners of fields, manufacturers of aircraft and aircraft equipment, and promoters of aviation. The temporary officers elected are as follows: President, Frank O'Neill; Treasurer Fred F. Smith; Secretary, David E. Hawthorne.

During the discussion preceding the organization it was made clear that this organization did not intend in any way to parallel existing associations. It is entirely local in its activities and commercial in its aim. Through federation with similar associations in other cities there will probably come a national organization that will afford an interchange of courtesies to pilots when on cross country trips. As the N.A.A. is a national patriotic organization it can have no commercial applications. The Aeronautical Chamber of Commerce is also national in scope and primarily is interested in developing aeronautics.

In case other pilots should wish to form similar local associations, Dr. Hawthorne, secretary of the C.A.A., 672 So. Main St., Akron, Ohio, will be glad to furnish any information desired.

The members of the Akron C.A.A. are as follows:

Harold L. Kullberg, Vearne C. Babcock, Lawrence A. Danison, J. H. Esch, H. R. Calvert, C. S. Lehner, M. D.; W. G. Clark, C. K. Wollam, L. J. Manning, Frank O'Neill, David E. Hawthorne, M. D.; Fred F. Smith, W. M. Sellers, Wilbur E. Brown, Herbert W. Maxson, T. J. Stephenson, Frank Eblen, J. J. Gilgen, J. Y. Black, A. Saley, Earl Burford, R. Rodrick, Earl Stewart, E. J. Cox, Belford Hawk, Hugo Beitz, August Little, Martin Little, William Curley, Henry Wacker and Alfred Shuttlewood.

AIRPORTS AND AIRWAYS

Long Island News

The persistent rainy weather and the high winds which have been such a notable feature of this spring have considerably interfered with flying activities in Long Island. Nevertheless, flying training, aerial photography and other commercial work is going on at every possible occasion.

The repair shops of the Curtiss Exhibition Co., at Garden City are overhauling and rebuilding a large number of planes. Among these are the three C6 Orioles of the Balsams Air Service which will resume its newspaper carrying service between Garden City and Dixville Notch, N. H., at an early date, and a large number of C6 and K6 Orioles which the Curtiss Exhibition Co. will put into passenger and messenger services the coming summer. In addition to five C6 Orioles available for passenger carrying work, three Orioles have been assigned to the messenger service for carrying newspaper films and photographs of big events across the country. This service will work in the form of relays, there being one Oriole stationed at Cleveland, Chicago and Omaha, each, while the New York end of the service will have for extra-rapid work the C6 Balilla and a DH4 with Curtiss D12 engine, which is now being rebuilt.

About forty JN4D's have been sold to students by the Curtiss Exhibition Co. during the past twelve months, a dozen of these sales having been made since the first of the year.

* * *

Maj. Sydney Cotton, a well known English flier who has been doing a lot of aerial survey work and seal hunting in Newfoundland and Labrador, has arrived in Garden City together with a very fine five-seater Martynside biplane equipped with a 360 hp. Rolls Royce Eagle engine. His equipment which includes a number of spares, such as engines, floats, propellers, etc. must have done some great traveling, for one of the cases bears the inscription "India."

* * *

A C6 Standard belonging to the Canadian Fairchild Aerial Surveys Company and bearing the marking G-CACH arrived at Curtiss Field at 4 p. m. on May 23, from Montreal, P.Q., where it left at 7:30 in the morning of the same day. The ship which was piloted by Kenneth Saunders, and carried W. Kehre as passenger, did a large amount of aerial survey work in Canada, operating in such low temperatures that kerosene had to be used in the radiator to prevent it from freezing. Mr. Saunders stated that temperatures anywhere between 30 and 50 deg. below zero were quite common in their work, and that despite this fact the C6 motor was "best ever."

* * *

A new light plane designed and built by Harvey C. Mummert, and equipped with a two-cylinder Harley-Davidson motorcycle engine, made its appearance on the field last week. This little ship is a cantilever monoplane of about 130 sq. ft. wing area and embodies some very ingenious constructional features about which more will be said at a future date. The wings can be swung back against the fuselage so that they lie flat against the latter, which is a great advantage for road transport. By means of a neat towing attachment which fits to the stern post, the ship can be towed on the road by a Ford car, as Mr. Mummert demonstrated himself by wheeling the plane into the field.

The setting up the ship required only a few minutes. As is always the case with a new ship, more volunteers offered their services for this work than could be employed, and the number of hands available would have set up a Jennie in record time. Only, when it comes to setting up a Jennie the willing hands have a way of disappearing into the fastnesses of hangars "on important business" that is almost miraculous.

Flying trials of the Mummert Light Plane will take place at an early date.

* * *

The Air Mail carries on, of course, rain or shine, and there is great interest in the forthcoming inauguration of the night flying service between Chicago and Rock Springs. The flying pay has been fixed at 10 cents per mile flown.

* * *

Harry Rodgers, the well known commercial pilot who has been operating flying boats for a number of years on the Long Island Sound and in Florida, returned to Port Washington seaplane station from Miami, Fla., on May 13 in a Curtiss Seagull. Pilot Rodgers covered the 1300 mi. distance in two days, carrying a passenger, which makes the performance all the more remarkable.

Return of the Morro Castle II

The Aeromarine flying boat Morro Castle II arrived on May 27 in New York from San Juan, Porto Rico, covering a distance of approximately 3000 mi. in four days. Its arrival at the Columbia Yacht Club, at the foot of West Eighty-sixth Street, marked the return trip of the first flight of a commercial plane between this country and Porto Rico, the boat having flown from here on Jan. 16 last.

At the wharf were Mrs. Zimmermann, I. M. Uppercu, President of the Aeromarine Plane and Motor Company; P. G. Zimmermann, a brother of the pilot, and Owen Shannon, Assistant Secretary of the Aeronautical Chamber of Commerce of America.

The boat was piloted by C. J. Zimmermann of the Aeromarine Plane and Motor Co., with Floyd Walton as mechanic.

The return flight to New York was started on May 23. Antilla, Cuba, was the first stop and the boat reached Key West at 4:30 p. m. the next day, where the flying boat remained over Sunday. The next stop was Southport, N. C., 800 mi. from Key West. The boat left Southport at 6 a. m. on May 27 arriving at Manteo, N. C., at 10:30 a. m. and in New York at 4 p. m.

Since its launching on June 1, 1923, the Morro Castle II. has flown about 22,000 mi. up to its arrival here. During its stay in Porto Rico it carried more than 2,000 passengers.

The only repairs necessary during the entire trip was the installing of a new Liberty engine to replace the old one which had done 157 hr. of flying, or a distance of approximately 11,000 mi.

The fact that the Morro Castle II. is the first all-metal-hull flying boat to be built in this country makes the performance particularly noteworthy.

Loening Expands

The Loening Aeronautical Engineering Corp. of 31st St. and East River, New York, have acquired a two story brick structure immediately adjoining their main factory building on the east side. The addition will increase their plant facilites by 16,000 sq. ft. Including the seaplane hangar on the river front, the Loening plant now has a total of 33,000 sq. ft. of space, with each structure directly abutting upon and connected with the other.

In addition to an order for ten sets of high lift Air Mail wings (described in our last issue) the Loening Corp. is doing some other very interesting work details of which will appear in an early issue of AVIATION.

Atlantic Corporation Gets Army Order

The Atlantic Aircraft Corporation of Hasbrouck Heights, N. J., whose formal incorporation announcement was made on May 13 has been awarded a contract by the Army Air Service for 100 welded steel fuselages for DH4 planes from designs submitted by the corporation.

American commercial aviation in the West Indies—The Aeromarine metal hull flying boat Morro Castle II landing on a beach in Porto Rico

Detroit News

The Michigan Fliers, a firm including Pilots Douglas Davis and Ted Fordon, are operating a commercial field at South Field and Nine Mile Road, Detroit. Their activities include passenger and exhibition flights, aerial advertising of all forms, aerial photo survey work and flying instruction.

The students now taking the flying course include Misses Stella Heberlin and Gladie Snell, the latter's brother, Bud Snell, and Earle Meyers. Mr. Meyers has purchased a Jennie from the school.

Pilot Douglas is overhauling the L.V.G. of the school which he expects to enter and fly in the On-to-Dayton race, next October. His younger brother, Paul Davis, has joined the firm and is flying a Jennie for passenger hops.

* * *

James Eastman, president of the Renulife Co., has purchased a Canuck from Whitney Nelson, and has secured the services of Virgil Simmons as his private pilot.

* * *

The Hunt Aviation Co. has taken Packard Field over from the Packard Motor Co. and at the same time has purchased several new Standard planes.

* * *

Eddie Stinson is going stronger than ever, and his new Junkers plane may be seen almost daily over Detroit. Stinson is, by the way, also the proprietor of a fine tire establishment which he opened last fall at 439 W. Congress St.

* * *

Glenn Hoffman has purchased a new Waco three-seater. Eddie Hamilton is still operating the Canuck he had last year and is doing a lot of photographic work.

Advance Aircraft Factory is Busy

The Advance Aircraft Co. of Troy, Ohio, manufacturers of the popular Waco three-seater with Curtiss OX5 engine, are very well pleased with the showing of the early flying season. They are daily receiving inquiries about their plane, and judging from the enthusiasm reflected in these letters they believe that this year will be highly successful for commercial aviation. Their only regret is that their present facilities will soon be inadequate for making short notice deliveries.

An interesting phase of some of their recent deliveries is the adoption of the Waco by several fliers for training purposes. The remarkable stability of the machine at the stalling angle and its very low landing speed make it almost "student-proof," and students can be soloed in half the time ordinarily required.

Howard Calvert of Stow Field, Akron, and A. Hoffman of Detroit are among the recent purchasers of Wacos for training purposes, stating that it saves them a number of grey hairs when the student soloes.

Engine Dealer's Cooperative Policy

DeNeal H. Samuel of DeNeal H. Samuel, Inc., Woolworth Building, New York, who is known in the industry as one of the largest dealers in airplane engines will, it is announced, be glad to cooperate with fliers, airplane operators, speed boat owners and other users of high speed engines in supplying installation information and advice relating to their aviation problems.

Mr. Samuel is an experienced pilot and stunt flier and is considered to be well versed in both the technical and practical sides of aeronautics. He has done considerable commercial flying at Annapolis, Md., is president of the Long Beach Aero Club and a lieutenant of the New York Aerial Police. Last summer Mr. Samuel was engaged in making numerous tests of planes in which his engines were being installed.

Amundsen to Start June 10

The three twin-engined flying boats of the aerial expedition which Roald Amundsen expects to lead to the North Pole probably will leave Pisa, Italy, about June 10, Lieut. Ralph E. Davison, U.S.N., who will pilot one of the planes, declared on May 24, in Rome.

On the flight from Pisa to Spitzbergen, the three machines will carry a party of fifteen, including a photographer and one newspaper man. At Spitzbergen, where they will meet Amundsen, the three machines will try to make the top of the earth in a dash without any intermediate stop.

At the Pole the supplies of gasoline and food of one of the three planes will be divided between the other two, one of which will attempt to fly back to Spitzbergen, while the other, piloted by Lieutenant Davison, will go on to Alaska. The third plane stripped of its supplies, will be abandoned in the polar ice.

Club Changes Name

The Aviation Country Club of Detroit has changed its name to The Aviation Town and Country Club of Detroit.

In the future the club's trophy in the International Air Races will be known as the Aviation Town and Country Club of Detroit Trophy.

Philadelphia News

By C. T. Ludington

It is reported that work toward the completion of arrangements for the 103rd Observation Squadron is progressing splendidly, recruiting being nearly seventy per cent completed. If arrangements go through as expected, the squadron will be equipped with a number of JNH's, a DH9, steel hangars, trucks and radio, etc. It will be the biggest boost to local aviation that has come for some time.

The enthusiastic members of the Episcopal Academy Branch of the Philadelphia Chapter of the N.A.A. spent Saturday, May 17, at the Pine Valley Field. They watched final adjustments being made on the Sport Farman flown by Robert P. Hewitt, prior to the ship's first flight of the season and later they were taken for flights by Victor Dallin and Hewitt.

Chestnut Hill and Germantown were showered with circulars in connection with the membership campaign of the Henry H. Houston 2d Post No. 3 of the American Legion in Germantown. These were dropped by Hewitt from the Sport Farman, and all those connected with the campaign were much pleased with the results obtained.

The little Farman which has become so common a sight in the local air, looks quite splendid once more, with its white enameled fuselage and blue nose, and its pilot states that its performance is better than ever. Perhaps some of this is due to its shiny new Valsparred wings.

Philadelphia Aviation is suffering a loss in that G. S. Ireland, who has so long been prominently identified with activities here, has transferred his headquarters to Garden City. All of us wish him well, but hope that the progress of the game will bring him back home again. Pine Valley Field will be kept open, as a considerable activity is planned there for this season and a welcome will at all times be ready for visiting fliers.

Capt. Douglas H. Robertson is now recuperating at Pine Valley and his many friends are amazed and delighted by his wonderful recovery.

W. Wallace Kellett and C. T. Ludington have recently returned from France with some marvelous tales. The former is being followed by two Farman Sports of the latest model, one for his own use and the other for Harold F. Pitcairn who will fly it from his new Bryn Athyn Field. A third Farman which might be termed "Custom built" is coming later for the Ludington Exhibition Company.

Victor Dallin, whose recent photographs of the opening of the new Camden Terminal of the Reading Railroad are now adorning numerous shop windows, has been kept very busy on the few clear days that have shown up, fulfilling the contracts for aerial photographs that he secured during the rainy days.

Plans are now maturing to hold at Pine Valley another Aerial Rally, similar to the very successful one of last year.

Akron News

On Saturday, May 24, pilots and plane owners about Akron held a field day exhibition of their planes at Stow Aviation Field, when school children had the opportunity of examining the ships while the fliers explained wing structure and design. On the afternoon preceding this exhibition 15 planes were flown over the city in formation to stimulate interest in the model contests May 31.

* * *

Capt. E. A. Lehmann, an official of the Goodyear-Zeppelin Corp., has sailed for Friedrichshafen, Germany, to be present at the trial flights of the ZR3, the newest Zeppelin which will be flown from there to Lakehurst, N. J., where it will be turned over to the U. S. Navy.

Captain Lehmann will be one of the navigation officers on the airship during its trans-Atlantic flight.

* * *

The American balloon team for the Gordon Bennett Cup race to be held June 22 at Brussels, Belgium, will use the same equipment carried in the National Balloon Race, although minor changes have been made in the radio sets they will employ to keep in touch with the broadcasting stations of continental and insular Europe.

Both Peek and Van Orman will make extensive studies of meteorological conditions before the race with the idea of determining their probable courses. Major Peek has been stationed at The Goodyear Tire & Rubber Co. for the past two years.

Lieut. Max Moyer, A.S., has been named alternate pilot of the balloon Maj. N. W. Peek will fly in the coming international races. Lieutenant Moyer left Akron, May 20 for Washington where he will stop a few days before sailing for Belgium.

* * *

Harold Kullberg, Akron's aerial policeman, is assembling an S.V.A. plane at Stow Aviation Field. It is the first ship of its kind ever brought to Akron.

* * *

A light monoplane is now under construction at the Babcock Airplane Co. here and will be entered in the light plane events at Dayton this fall.

Hugh Allen, secretary of the Akron chapter of the National Aeronautic Association, sailed for Europe May 24. He will visit the Zeppelin Co. at Friedrichshafen, Germany.

* * *

Akron plane owners and pilots are organizing an association which will probably be affiliated with the Akron chapter of the N.A.A. Fred Smith, owner of Stow Aviation Field, is directing the formative arrangements.

* * *

An intercity contest for miniature planes and airships held May 10, with the participation of entries from Detroit and Chicago, gave a real impetus to a model building program inaugurated in the schools last fall. In this competiton Akron-built models won all the speed events, one plane traveling 100 ft. in 3.1 sec.

What is believed to have been a new record for a toy airship was established the same day when a four foot airship remained in the air under its own power for 16.2 min. All the plane and airship models so far constructed here are driven by rubber bands.

Des Moines News

Flying is going on full swing in Des Moines. The firm of Whites' Aircraft, which is located on Des Moines airport, the new city field, has been doing considerable flying every day.

The new Des Moines airport is located 1¼ mi. South of the old Sweeney field. It is West by North of the city, and is located just North of the Glendale cemetery. The ground is in good condition and it has a four way take off. Gas, oil, and parts are available on the field.

Whites' Aircraft have produced a new wing for a Jennie by reconstructing the old wings and redesigning them. The new wings will give about 50 per cent better performance, carrying three people. A miniature monoplane designed by Harold White is on the field and has been doing some flying.

Pilots flying near Des Moines are invited to drop in at Des Moines New Airport.

Spokane News

By E. H. Partridge

The National Guard aviation base for the Ninth Corps Area has been awarded by the War Department to Spokane, Wash., and construction of two standard government steel hangars is to be begun in the near future.

A municipal flying field, 2500 x 3500 ft., has been made available by the city to the Guard. The city of Spokane has pledged $2500, and Spokane county has given a like amount, with $5000 remaining and which is being raised by public subscription.

Spokane city and county officials hope through improvement of the field to insure Spokane a place on the northern mail route when it is established.

Curtiss-Reed Propellers in France

A manufacturing license to produce in France metal propellers to the Curtiss-Reed patents has been acquired by P. Levasseur, one of the leading French propeller manufacturers.

Notice to Aviators

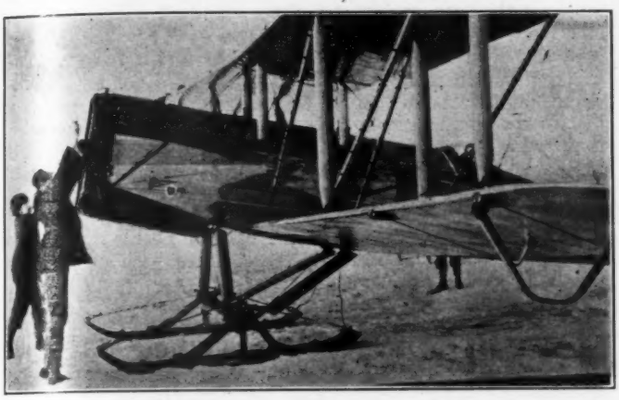
Notice to Aviators No. 5 (1924), issued by the Hydrographic Office, Navy Department, contains information on facilities for seaplanes in Central America and Panama.

More About Arctic Mail Flying

The pioneer work Mail Pilot Carl B. Eielson is doing in Alaska for the Air Mail Service has before been given recognition in these columns. That his work occasionally consists of more than mere mail carrying will be seen from the following report of his to Col. Paul Henderson, Chief of the Air Mail Service, covering the sixth Alaskan mail flight made April 23, last.

Pilot Eielson's report reads as follows:

"Left Fairbanks at 6:50 a. m. Temperature 10 deg. Fahr. One half cloudy. No wind. Landed at Nenana 23 min.



The Air Mail in Alaska—Close-up view of the skid landing gear of the Mail DH plane piloted by C. B. Eielson between Fairbanks and McGrath

later. Took on 365 lb. of mail and departed after 7 min. Arrived at McGrath at 9:27 a. m. Flying time 2½ hr. This is the fastest time I have made.

"The mail which I took to McGrath on these last two trips would not have gotten there for two and a half months in the ordinary course, because the last dog team had departed for McGrath before April 9 and the first boat cannot get there before around June 20.

"In McGrath it was explained to me that a very serious hospital case had developed and there was no doctor within several hundred miles. The sick man, William Hummel, was brought by dog team from Tacotna and I took him to the Fairbanks Hospital. However, I also brought all the mail there was in McGrath. The train is bad now and the doctor here has since advised me that it was probably a case of life or death. For a report on the case you may write to Doctor Romig, Surgeon for Government Railroad, Fairbanks, Alaska. The trip was made without compensation. We left McGrath at 11:30 a. m. and arrived at Fairbanks at 2:50 p. m.

"In landing at Fairbanks the standards on one skii broke and the plane nosed over, breaking the propeller and damaging the radiator. This was caused by poor judgment in attempting too quick a turn on the ground with skiis. The plane has been repaired again and is now ready to go. The patient stood the trip very well.

"So far no trip has been postponed on account of weather and every return trip, of practically 600 mi., has been completed on the same day as started."

Fairchild Camera Seaplane Passes Tests

George Post, test pilot for Huff, Daland & Co., Inc., recently demonstrated the new Fairchild Camera Seaplane to Pilot E. P. Lott of the Fairchild Flying Division. The test was made at the Company's factory at Ogdensburg, N. Y., and the plane complied with the contract specifications. It will be used by the Fairchild Aerial Surveys Co. (of Canada) Ltd. for aerial surveying and photographic work. Pilot Kenneth Saunders of the Canadian Company will fly the machine from Ogdensburg to Grand' Mere, P. Q., which will be the base of operations.

A second plane, which will be used in this country to operate from the land, will be ready within the next week. Capt. R. H. Depew, Jr., Chief of flying operations for Fairchild, will pilot the machine from Ogdensburg to Garden City after acceptance.

Kansas City News

By T. S. Jewett, jr.

A new stunt was inaugurated the first part of last week by the Air Terminal Association in conjunction with the Sweeney Radio and Electrical School of this City, in broadcasting every evening the day's activity at Richards' Field. This radio broadcasting includes the number of ships in, where from, the number out, where to, and their cargo, the weather conditions in and around Kansas City and at nearby fields. This, we think, is quite a service and we know that everyone interested will more than welcome this day's news through the air.

The County Road Commissioners, in connection with the City Park Commissioners, are ready to open the new boulevard from Swope Park to Raytown, Mo., which will pass Richards' Field. This will be quite a benefit, both to the general public and to the Field, because, as it now stands, the main roadway goes about 500 yd. north of the Field, whereas this drive will lead right up to the main entrance with its stone pillars and bronze tablet, a memorial gate dedicated to Lieutenant Richards, in whose honor the Field was named.

The recent run on a large Springfield, Mo. bank, in which it sent out calls for financial help in the way of more money to pay off its depositors, was answered by the Kansas City Clearing House order for an airplane at Richards' Field to be kept in readiness to transport to Springfield in the neighborhood of $400,000. Luckily, (or, unluckily, for aviation interests) this help was not needed, although the airplane was kept all day in readiness.

Seven Army airplanes carrying twelve members of the reserve officers' air corps of Kansas City, took off at 9 o'clock Saturday morning, May 10 at Richard's Field for Ft. Crook, Neb., for the dedication of Offitt Field there.

This field was named in honor of the memory of an Omaha flier who was killed in the World War. Starting July 1, the field will be used by the Army Air Service. It is equipped for night flying.

The fliers from Kansas City were as follows:

Capt. Thomas Dawson, in charge of flight; Lieut. William L. Campbell, Lieut. Frank Hay, Lieut. Burnham W. Diggle, Lieut. James K. Walker, Lieut. W. E. Long, Lieut. George Long, Lieut. O. W. Haynes, Lieut. George B. Grogan, Lieut. E. H. Smith, Lieut. James B. Carroll and Mechanic James A. McKesson.

The French Engine Competition

The 240 hr. endurance test for aviation engines, organized by the Aero Club of France on the initiative of the French government with 2,000,000 francs in prizes and for expenses, has become a purely national event by reason of the decision of the Fiat Company to withdraw the only engine of other than French construction. There are now eight competing firms, with twelve engines developing between 350 and 450 hp., to take part in the most important bench test ever held for aviation engines.

One of the distinguishing features of the Fiat engine prepared for this competition is the use of a supercharger driven from, and forming an integral part of, the power plant, by means of which the power output is constant whatever the altitude of flight. Up to the present this result has only been obtained by the use of auxiliary and more or less makeshift devices, and the Fiat invention undoubtedly marks a distinct progress, for the real value of an aviation engine resides in its ability to operate at widely varying altitudes without any loss of power.

Under the rules of the French competition the engines have to be tested on the bench at practically sea level and not in the rarefied atmosphere in which they will normally be called upon to work. To meet this requirement, the Fiat engineers found it necessary to modify their engine in order to put it on an equality with those of competing firms. The time available for this was too short, so it was decided to withdraw from the trials.

It is understood, however, that the new Fiat supercharger aviation engine will be seen in the endurance trials to be held in a few months' time by the Italian government, under the rules of which account is taken of the constancy of the power output at varying altitudes.

UNITED STATES AIR FORCES

U. S. ARMY AIR SERVICE

A Long Flight Over the Airways

Maj. Frank M. Andrews, A.S., accompanied by Maj. S. W. FitzGerald, A.S., recently completed a long flight over the airways from Kelly Field, Tex., to Bolling Field, D. C., and return, making the outward trip in an elapsed time of 33 hr. 5 min. and the return trip in 34 hr. 45 min. As regards the flying time, the two airmen made considerably faster time on the trip to Bolling Field, 14 hr. 30 min. against 18 hr. for the return trip.

Flying a DH plane, the start from Kelly Field was made at 6:10 a. m., and going by way of Dallas, Tex.; Muskogee, Okla.; and Springfield, Mo., they arrived at Scott Field, Ill., at 3:55 p. m. the same date. Landings were made at Dallas and Muskogee for gasoline and oil. They encountered moderate southwest winds at 3,000 ft. from Kelly Field to Scott Field.

Leaving Scott Field the following morning at 6:30 a. m., they arrived at Bolling Field, D. C., at 3:15 p. m. same date. Landings were made at Fairfield, Ohio, and Columbus, Ohio, for gas and oil. Surface winds were south to east, with moderate northwest winds at 5,000 ft.

After a stay of five days in Washington, the airmen departed on their return trip from Bolling Field at 6:30 a. m., and arrived at Scott Field at 4:00 p. m., same date. Landings were made at Moundsville, W. Va., and Fairfield, Ohio, for gas and oil. Strong northwest winds prevailed from Bolling to Moundsville, with moderate variable winds from the latter station to Scott Field. Several rain and thunder storms were encountered en route.

Leaving Scott Field at 9:30 a. m. the following day, the airmen arrived at Kelly Field—over same route as the northbound trip—at 6:15 p. m., same date. One landing was made at Muskogee, Okla., for gasoline and oil. Strong northwest winds prevailed from Scott Field to Dallas, Tex., and variable winds from there to Kelly Field.

Major Andrews stated that the service on the airways, Kelly to Scott Field, was good, but inadequate, due to insufficient personnel, and that communications were poor; but that the service on airways, Scott Field to Bolling Field was excellent, and that communications were good. He further stated that the route from Muskogee to Scott Field, via Springfield, Mo., by following the railroad is over from very good to fair country for forced landings and is much freer from fog than via Kansas City, and that practically all Kelly Field pilots with whom he has spoken prefer the Springfield route to the Kansas City route.

Obituary Notice

Wallace A. Frederick—Born in Texas, Sept. 20, 1895. Private, 61st Aero Sqn., Aug. 3, 1917; Sec. Lieutenant, Nov. 27, 1917. Hon. Disch. Oct. 27, 1919. Sec. Lieutenant, A.S., Reg. Army, July 1, 1920. First Lieutenant, same date.

He was on duty at Camp Stanley, Tex., from Dec. 15 to 27, 1917, with 234th Aero Squadron; at Kelly Field, Tex., with 178th Aero Squadron, to April 24, 1918, and with 115th Aero Squadron to Oct. 27, 1919—date of honorable discharge from Emergency Commission.

He joined at Kelly Field and served there from Sept. 26, 1920, to May 16, 1921; at Langley Field, Va., to Oct. 30, 1921; at Kelly Field serving in 40th School Squadron, as Squadron Supply and Mess Officer, and airplane pilot—to date of death.

He died at Kelly Field, April 17, 1924, when the airplane in which he was instructing Cadet R. H. McCauley in night flying crashed and caught fire. Cadet McCauley was also killed.

New Barrage Balloon

An experimental barrage balloon of 20,000 cu. ft. volume has recently been constructed from standard rubberized balloon cloth by the Engineering Division at McCook Field and favorable weather conditions are awaited for its testing. The barrage balloon is a captive balloon, designed for an altitude of 15,000 ft. A number of these anchored several hundred feet apart would form a high fence about arsenals, ammunition bases, towns or cities, through which it would be difficult for an enemy airplane to fly without becoming entangled in the anchor cables. Especially would such danger exist at night. Attack by air therefore would have to be by bombs dropped from altitudes above the balloon positions, and the placing of bombs to strike a target from such an altitude would be a decidedly difficult feat.

This balloon is an adaptation of the Italian A-P (Avorio-Prassone) Observation Balloon, the lobes being utilized as receptacles for gas which is automatically valved from the balloon when the pressure becomes too great, due to increased elevation or temperature. This arrangement of valves, located between the envelopes and the lobes, permitting the passage of gas from the envelope to the lobes and vice versa, prevents the loss of gas and the consequent loss of lift. The lobes have an expansible feature by means of which and through the medium of the valves the pressure in the balloon is held practically constant.

The tests will determine the ability of the balloon to reach its 15,000 ft. altitude, its stability at this altitude and lower ones, as it is let up and hauled down, under the conditions begotten by the varying degrees of expansion of the lobes.

A small two-wheeled winch, operated by a Ford motor, has been designed and is now under construction for use with this balloon. In operation the winch is staked to a fixed position and the cable is laid along the ground for a hundred or more feet where it is passed over a swivel pulley, held by an anchorage to the ground.

These balloons can be towed to new positions, or if the contemplated move is for a great distance, they can be hauled down, deflated and transported by truck.

Bids for Ambulance Plane

The Air Service Engineering Division invites bids, subject to the usual provisions, for the construction of a Type A1 Ambulance Airplane to be built around the 400 hp. Liberty engine as designed by the Engineering Division. The plane is to carry a pilot, medical officer and two patients, weighing together 720 lb.; 108 gal. of gasoline and 10.8 gal. of oil, weighing together 729 lb.; and equipment weighing 326 lb.; making a total useful load of 1775 lb.

The contractor will not be responsible for performance, general performance or factors of safety of the plane unless he should make unauthorized changes in the design or construction, or where drawings or specifications fail to cover a given item he should fail to use reasonable care or skill.

Bids will be received at the office of the Contracting Officer, Engineering Division, A.S., McCook Field, Dayton, Ohio, until 10 a. m., June 16, 1924.

Technical Sergeants, A.S.

Of the list of 107 technical sergeants, Air Service, U.S.A., which was prepared in the War Department as of April 20, six of this number will be eligible for early retirement due to the completion of their thirty years of active service. Those who are slated for early retirement are Paul L. Coble, Langley Field, Va.; Floyd B. Haney, Panama; David Reeves, Philippine Islands; John F. Brown, Langley Field, Va.; Nick Roeser, Panama, and George Commins, Bolling Field, Anacostia, D. C. There are two vacancies in this grade at present, the authorized strength being 109 technical sergeants.

Army Air Orders

First Lieut. Charles G. Brenneman, A.S., Selfridge Field, to A.S., Philippine department, Manila, by transport sailing San Francisco Aug. 1.

One month's leave to First Lieut. Ray L. Owens, A.S., from April 23.

First Lieut. William Turnbull, A.S., Scott Field, to Kelly Field for heavier-than-air training, effective May 1; thence to A.S., Hawaiian department, Honolulu, by transport sailing San Francisco Aug. 2.

First Lieut. Albert C. Foulk, A.S., McCook Field, to A.S., Hawaiian department, Honolulu, by transport sailing San Francisco July 2.

Sec. Lieut. James E. Gardner, A.S., retired by Army retiring board account disability incident to active service.

Orders April 15 First Lieut. Albert W. Stevens, A.S., amended to read four months' leave to Lieutenant Stevens from May 7.

Capt. Benjamin W. Lewis, M.C., from duty as student at School of Aviation Medicine, Mitchel Field, and from further assignment and duty at Fitzsimons General Hospital, Denver, to Kelly Field, after leave granted.

Capt. George E. Stratemeyer, A.S., Hawaiian department, Honolulu, to U. S Military Academy, West Point, via transport sailing Aug. 12 for San Francisco and thence by rail to reach West Point Aug. 25.

Two months' leave to First Lieut. Eugene C. Batten, A.S., on arrival in U. S.

First Lieut. Max Balfour, A.S., Paris, France, to Mitchel Field.

Capt. Michael F. Davis, A.S., Org. Res., Hqtrs., 9th Corps Area, San Francisco, to Balloon and Airship School, Scott Field for training by Sept. 10.

Leave First Lieut. Roderick N Ott, A.S., extended four days.

Following-named A.S. officers to stations named, after leave granted: Maj. Jacob E. Fickel, Capts. William F. Volandt, Hubert R. Harmon, Lorenzo L. Snow, First. Lieut. Ernest E. Harmon, Office, C.A.S., to Bolling Field; Maj. Delos C. Emmons, McCook Field, to Crissy Field; Capts. Stephen J. Idzorek and James F. Doherty, Middletown A.I.D., to Kelly Field; Capt. Theose E. Tillinghast, and First Lieut. Alfred J. Lyon, McCook Field, to Selfridge Field; First Lieut. Arthur L. Johnson, McCook Field, to Chanute Field; First Lieuts. Caleb V. Haynes and Burdette S. Wright, Office, C.A.S., to Crissy Field and Kelly Field, respectively; First Lieuts. Barney McK. Giles and Kenneth C. McGregor, San Antonio A.I.D., to Kelly Field; First Lieut. Charles E. Branshaw, San Antonio A.I.D., to Brooks Field; First Lieut. Edwin F. Carey, Middletown A.I.D., to Mitchel Field; First Lieut. Clements McMullen, Brooks Field, to San Antonio A.I.D.; First Lieuts. Karl D. Fastenau, Charles N. Monteith, John P. VanZandt, Franklin O. Carroll, McCook Field to Phillips Field, Langley Field, Bolling Field, and Kelly Field, respectively; First Lieut. Louis N. Eller, A.S. Technical School, Rantoul, to Chanute Field; First Lieut. St. Clair Streett, Bolling Field, to Office, C.A.S.; First Lieut. Richard T. Aldworth, Kelly Field, to San Antonio A.I.D.

U. S. NAVAL AVIATION

Rear View Mirrors for Aircraft

Rear view mirrors, similar to those used on automobiles, are being installed on Naval planes operated by the Naval Air Station at San Diego, Calif. These mirrors will serve the two-fold purpose of covering the approach from the rear, and giving the pilot of the plane so equipped a view of the tail surfaces, including the vertical and horizontal rudders. This installation is designed to introduce an added element of safety into aircraft operations, as the possibility of collisions from the rear will be greatly reduced, and any failure of any part of the plane's tail mechanism will be at once apparent to the pilot, who can land before the trouble can become serious.

Another interesting instrument installation on planes of the San Diego Air Station is the introduction of the periscope principle to bring the readings of the "drift indicator," with which all planes are equipped, to the dashboard of the plane, within the constant range of vision of the pilot. The drift indicator is an instrument that enables the pilot of a plane to check his actual course over the ground as compared with the course that he is flying by compass. The drift indicator is ordinarily located to one side, outside of the body of the plane, and not in direct vision of the pilot. This application of the periscope principle to the use of the drift indicator will be of particular value to planes used for photographic mapping, as in such work a steady course is a prime requisite.

Naval Air Orders

Lieut. (jg) Charles E. Bauch, det. Nav. Air Sta., Lakehurst, N. J.; to U.S.S. Shenandoah.

Lieut. Roland G. Mayer (CC), det. Nav. Air Sta., Lakehurst, N. J.; to U.S.S. Shenandoah.

Ch. Mach. Shine S. Halliburton, det. Nav. Air Sta., Lakehurst, N. J.; to U.S.S. Shenandoah.

Lt. Comdr. Victor D. Herbster, det. Board of Inspection and Survey, Navy Dept.; to Aircraft Squadrons, Scouting fleet, involving flying.

Big Pigeon Race at Coco Solo

A 100 mi. pigeon race on the Fourth of July is contemplated by the Naval Air Station at Coco Solo, C. Z. The entries will be from the Naval Air Station and France Field, an Army aviation post near the Coco Solo station.

In a similar race held on the Fourth of July last year at Coco Solo, the Navy pigeon came in 16 min. ahead of its Army rival. Due to the mountainous regions of Panama and the heavy rainfall, it has been estimated that a 100 mi. race in Panama is equivalent to a 500 mi. race under more favorable conditions.

Pilots Insignia

The Navy Department has directed that when the present supply of insignia for Naval Aviators, Aviation Pilots and Balloon Pilots is exhausted, officers will be required to supply themselves with these insignia at their own expense.

The balloon ship Wright has begun the airplane photographs for making the photographic map of the area in the Gulf of Batabano, Cuba, being surveyed by the U.S.S. Hannibal.

CALENDAR OF AERONAUTICAL EVENTS

March 25.	Start of the British World Flight, Southampton, England.
April 6.	Start of World Flight of the U. S. Army Air Service, Seattle.
June 3-11.	International Aircraft Expositon, Prague, Czechoslovakia.
June 15.	Gordon Bennett International Balloon Race, Brussels, Belgium.
June 21.	Annual F.A.I. Conference, Paris, France.
June 22.	Commodore Beaumont International Cup Race for high speed airplanes, Istres, France.
July 5-6.	Zenith International Airplane Efficiency Race, Paris, France.
August.	"Tour de France des Avionnettes." International Round-France race for light airplanes.
Oct. 2-4.	International Air Races, incl. Pulitzer Trophy Race, Dayton, Ohio.
Oct. 24-25.	Schneider Cup Race, Baltimore.
Dec. 17.	Twenty-first anniversary of the first successful airplane flight.

Naval Reserve Physical Examination for Aviation

The following is quoted from a communication received from the Bureau of Medicine and Surgery regarding physical examinations of officers of Class 5 of the Naval Reserve Force.

"The physical examination for flying requires medical officers specially trained in aviation medicine, and considerable special apparatus. The following stations and ships are equipped with personnel and material to conduct the physical examinations for flying: U. S. Naval Air Station, Pensacola, Fla.; U. S. Naval Air Station, San Diego, Calif.; U. S. Naval Air Station, Hampton Roads, Va.; Naval Medical School, Wash., D. C.; Naval Air Station, Coco Solo, C. Z.; Naval Air Station, Pearl Harbor, Hawaii; Marine aviation units, Quantico, Va.; San Domingo City, Dominican Republic; Port au Prince, Haiti; Sumay, Guam. Ships: Flag Ship Commander, Air Craft Squadrons, Battleship Fleet; Flag Ship Commander, Air Craft Squadrons, Scouting Fleet; Flag Ship Commander, Air Craft Squadrons, Asiatic Fleet. It is suggested that all future examinations of Reserve Officers for transfer to Class Five from Class Six be conducted by medical personnel at the above stations and ships."

A Rapid Promotion

From Chief Petty Officer in the U. S. Navy to General in the army of Honduras is the advance in rating made by former Aviation Chief Machinist's Mate Kruger. Together with former Ensign L. W. Brown, U.S.N., Kruger is piloting an obsolete plane for the Revolutionary forces of Honduras. The two Generals took part in the recent attack on the capital of Honduras, Tegucigalpa, made by the revolutionists.

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PUBLISHER'S NEWS LETTER

We hear varied comments on the project to move McCook Field to the new site in Dayton. While it is generally agreed by practically everyone who knows anything about the progress of our aviation that the activities of McCook Field should be decreased rather than increased, Dayton seems to look at McCook Field as its particular "pork barrel" from which it is to draw increasing returns. The best evidence of this hope, which up to the present has been kept very much under the ban of silence, is found in this month's *Slipstream* which purports to give the real Dayton point of view in aeronautics. It states:

"At the present time the architects are still busily engaged in mapping out plans of buildings and construction work in connection with the proposed new home of the Engineering Division. Tentative plans, linked with the proposed sale of the five abandoned air fields, will aggregate a sum of $10,000,000 for the purpose of erecting permanent buildings. The expansion made possible by the move will mean an annual payroll of from $2,000,000 to $5,000,000 (McCook Field now has the fourth largest pay roll in Dayton). It will give employment to from 3,000 to 5,000 skilled workmen. It will mean the building of hundreds of new homes. It will give Dayton further world wide publicity. It will increase Dayton's population many thousands. It will furnish a fitting memorial to the Wright Brothers. It may result in the location here of an air academy surpassing the West Point and Annapolis institutions. It will advance the educational opportunities and standards of the community. It will focus the attention of the world upon Dayton's activities. It will attract the manufacturer of aircraft. It will draw thousands of desirable visitors. It will add to Dayton's reputation as a precision center. It will be splendid evidence of the progress and patriotism of Dayton people."

* * * *

The above will make interesting reading for Congressmen and Senators when the moving is considered. If Dayton only knew it, it is its own worst booster for the project. One only has to recall the ridicule that was first heaped on the Wright Brothers by Dayton, and how Dayton let the Wright Company run along without much typical Dayton foresight until some New York financiers paid about three quarters of a million for the original company's patents. When the war came there was great aircraft activity in Dayton. Factories, about to be curtailed in their normal business, were looking for "war orders." About $17,000,000 was spent in Dayton for aircraft, not to mention the Liberty engine parts contracts. Such companies as the National Cash Register and Delco devoted almost all their efforts to aircraft parts manufacture. The Engineering Division of the Air Service, which was originally located at Langley Field, was put on trains and moved to Dayton by one of its then leading citizens, Col. E. A. Deeds. The site selected was a dangerous one for experimental flying as has been shown repeatedly by the crashes at McCook Field. After the war Dayton tried to sell the huge Dayton-Wright aircraft plant to the government for a new McCook Field Aircraft Factory. And now $400,000 has been subscribed in the "swiftest and most successful money-raising campaign ever conducted in Dayton." With a $10,000,000 expenditure in prospect, an increasing pay roll and tripling the personnel, Dayton can only be praised for its business acumen for wanting to keep McCook Field within its limits.—L.D.G.

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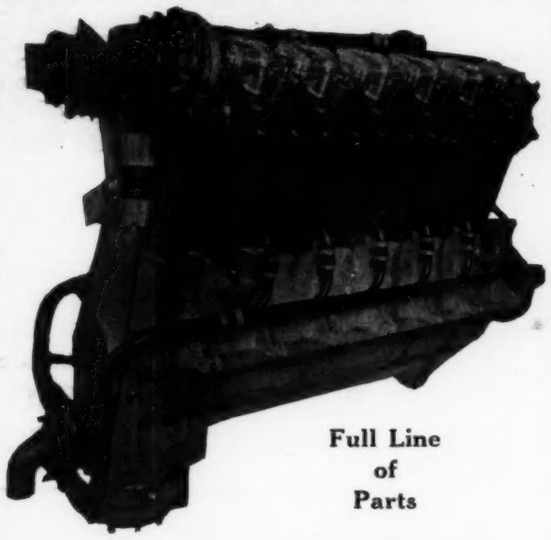

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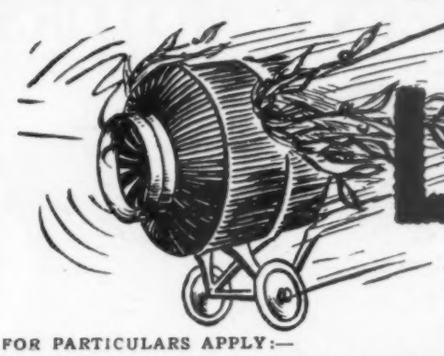

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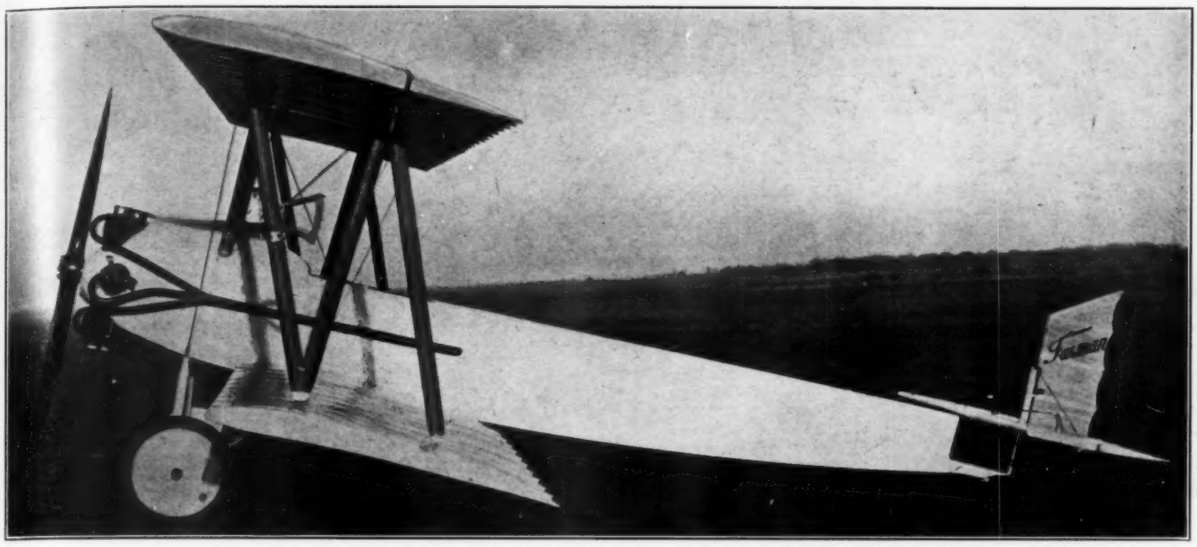

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